

Cognitronics Corporation
549 Pleasantville Road
Briarcliff Manor, N.Y. 10510
Tel: 914-769-7900

Voice Wiring

Thank you very much for your inquiry. Should you require additional information or if you wish to receive up-to-date Cognitronics Technical Information as it becomes available, please check the appropriate boxes and drop this card in your out box.

- Please send me the following additional information. I am primarily interested in Speechmakers for:
- Data Processing, Communications, Instrumentation,
- Other. _____
- I have an immediate application in mind. Please have someone contact me.
- Please place my name on your technical mailing list.

T. Nelson
Box 1546
Poughkeepsie, N.Y.

PLEASE INDICATE ZIP CODE IF NOT LISTED.

- MY NAME AND ADDRESS ARE CORRECT AS SHOWN.
- PLEASE NOTE CORRECTION ABOVE

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Cognitronics®

VOICE WIRING INSTRUCTOR

- 20% INCREASE IN PRODUCTIVITY
- DECREASED ERRORS • EASE OF CHANGING INSTRUCTIONS • COMPUTER GENERATED WIRING PROGRAMS TO VOICE INSTRUCTION • AUTOMATIC OR SELF-PACING • NO DEGRADATION OF VOICE • SHORT TERM INVESTMENT RETURN

Makes obsolete methods that use wire lists or other forms of visual aids which guide assembly wiring procedures.

Cognitronics' Voice Wiring Instructor (VWI) system is an automated method of furnishing clear, concise, audio instructions to production assemblers from digitally encoded data. The system can be applied to operations that require POINT-TO-POINT wiring, PRINTED CIRCUIT CARD assembly, HARNESS-TO-CONNECTOR or any other wiring configurations used in electrical/electronic systems. It can also be used as a quality control tool to check out assembly wiring. Line inspectors are verbally informed of the color code and numbers of wires that should exist at a designated terminal, thus assuring detection of wiring errors.

The VWI utilizes an automatic speech generation system, a bi-directional papertape reader, an audio listening device and a switch control to generate vocal assembly instructions. As flexible as it is efficient, the Cognitronics system readily adapts to other input sources such as, punched cards or on-line computers.

Use of the VWI enables operators to work faster with greater accuracy. No time is lost viewing the instruction, locating the work area or rechecking the instruction. The assemblers eyes are always on the work, considerably reducing errors. Accuracy is further enhanced by the voice description of the points to be wired as well as specific details of the wiring.

Because the VWI utilizes digital input wiring instructions—corrections, additions and deletions can easily be accomplished with savings in time and money. Overwriting on the punched tape with a special code will delete any unwanted message. Removal or insertion of a punched card is just as easy.

A minimum increase of 15-20% in productivity through the use of the VWI has been PROVEN in actual applications. This efficiency factor does not include the benefits realized by decreases in rework attributed to operator errors when using visual guides in assembly wiring. Rework has been reduced 65% with voice instruction.

The VWI system's voice response capability is a Cognitronics Speechmaker® which has a high-reliability photographic film audio memory drum with a group of sound tracks, each



track containing a word or phrase. Vocabulary ranges from ten spoken digits to 189 words. A light source and aperture provide a narrow light beam that is directed through the rotating audio memory drum. This light beam is modulated by the pre-recorded audio on each track and in turn detected by silicon photosensitive cells located within the memory drum. The output of the photocells is then amplified and fed directly to the headset associated with the VWI.

The system may be used in conjunction with audio magnetic tape and computer generated wiring instructions which are programmed on paper tape or cards. This approach automatically records the spoken wiring instructions directly on the magnetic tape without preparation of a written script and eliminates the need for an individual to dictate voice messages. This equipment arrangement also simplifies and decreases the time presently required to edit and change existing master magnetic tape voice recordings.

VWI — Operation

Wiring instructions programmed in digital coded form to reflect the origin, intermediate and terminal connections of a wire can be taken from a master cable or wire list and manually punched tape or cards.

They can also be generated directly from a computer that has been programmed to do wire listing. Once a program has been verified, the digital commands will generate voice messages which are error free.

To operate the system, the punched tape or other input medium containing the instructions, is placed in the VWI reader. The assembler can then control the voice instruction by a foot pedal or other device to activate the forward and reverse audio controls. Upon command the system supplies the assembler with easily understood verbal instructions for each assembly function. These instructions can include the equipment rack, connector, terminal point, color coding, wire size, soldering or wire wrap information. If the instruction must be repeated for any reason, the operator simply reverses the tape at high speed and the VWI automatically stops at the beginning of the last instruction heard. When



the forward control is again activated the instruction will be repeated. Hunting and searching for a message to be repeated is not necessary since the reverse switch moves the input tape back one full instruction for each depression.

Cognitronics has designed versatility into the equipment to permit presentation of audio instructions in various formats. Silence time between words can be varied and the message output can be controlled manually or automatically.

Multiplex Voice Wiring Instructor

Systems incorporating multiplex techniques are also optionally available for the Voice Wiring Instructor. With this approach only one Speechmaker unit is necessary for simultaneous, multiple instructions to any number of assembly locations, as contrasted with the individual operator stations described above.

A central buffer memory can also be used to store wiring instructions in digital coded form. A control box and audio reproducer are all the equipment required at each work location. Call up of a voice instruction from any location is commanded by the forward-reverse controls.

Another multiplexing system uses an on-line computer with a disk file. This approach allows different wiring programs for a number of products to be stored and readily retrieved upon short notice. If the computer buffer memory has sufficient storage with rapid access capability, multiple wiring programs can be retrieved and transmitted to various assembly locations, for simultaneous, multiple product wiring. These systems will permit wiring assembly, quality control and other programs to be conducted at the same time without interference or interruption to any work station.

The various VWI systems described can be used for assembly jobs other than wiring; including insertion of printed circuit cards into previously wired main frames.

The voice instruction equipment will pay for itself with half the usual time period allocated for most capital equipment. An investment in this equipment can return itself in as little as 3 months.

In addition to the VWI, Cognitronics offers a variety of automatic speech generation systems and hardware to meet virtually every requirement for automatic verbal response to digital or switch interrogation. Cognitronics' Sales and Engineering Departments will be happy to work with you to provide an efficient equipment configuration for a Voice Wiring Instructor or to develop an Automatic Speech Generation System to your requirements.

Applications

- **Wiring Assembly Instructions**
- **Quality Control Tool**
- **Mainframe P.C. Card Assembly**

SPECIFICATIONS

Input Voltage	115 VAC, 60 Hz
Frequency Response	Within 3 db, 300 Hz to 4 KHz
Audio Output Level	Adjustable by potentiometer from 0 to 4 V, peak-to-peak max.

VWI EQUIPMENT CONFIGURATIONS

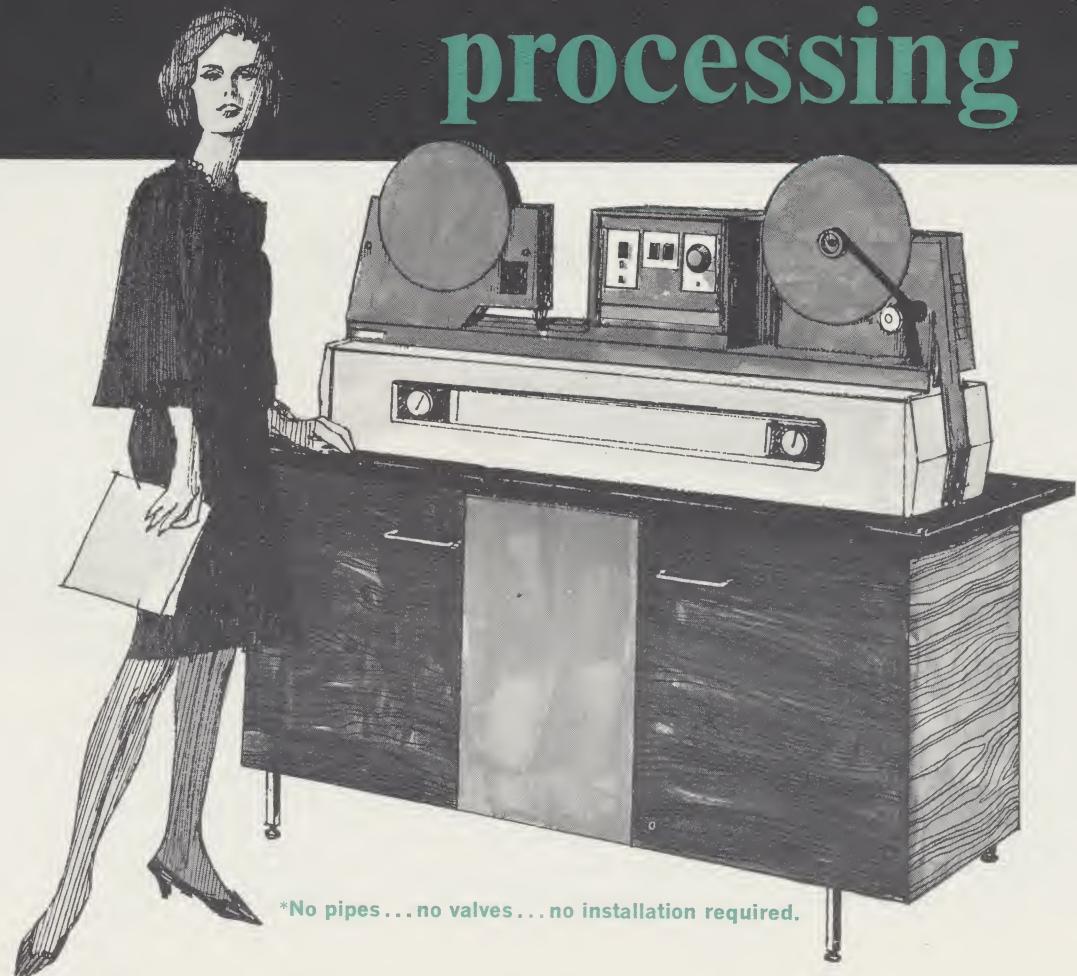
No. of Assembly Stations	Digital Coded Input*	Forward/Reverse Control	Headphone	Speechmaker
	Paper tape or card readers or computer on-line	Foot pedals or waist mounted	Single or double earpiece	10, 31, 63, or 189 words and/or phrases depending on model
one	X	X	X	X one for each station
multiple (multiplex)	X (each station)	X (each station)	X (each station)	X (one common)

*The input readers can be uni-directional or bi-directional as the application requires.

The VWI can be used to record voice instructions directly onto a master audio magnetic tape recorder.



A remarkable new machine from **3M** takes plumbing* out of microfilm processing



*No pipes...no valves...no installation required.